

GLEN VALTOS

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OS Grid Reference: NB070344

Highlights

Glen Valtos is a notable example of a glacial meltwater channel formed during the melting of the Late Devensian ice-sheet. It provides important evidence for interpreting the pattern of meltwater flow and the ice-sheet configuration.

Introduction

Glen Valtos (NB 060343 – NB 084346) is a 2.5 km long meltwater channel located near Uig in west Lewis. In the Outer Hebrides there are few areas in which clear systems of meltwater deposits or landforms are developed. The most impressive such features occur in south-west Lewis in the neighbourhood of Uig where the Glen Valtos meltwater channel is particularly prominent. This channel, as well as being impressive in its own right, is significant also as part of a sequence of glaciofluvial features deposited by meltwaters flowing from west to east, at right angles to the direction of ice flow during the last glaciation of the area. Glen Valtos has been noted in several accounts of the glaciation and deglaciation of the Uig area (Jehu and Craig, 1934; Godard, 1965; Von Weymar, 1974, 1979; Peacock, 1984a).

Description

The Glen Valtos channel begins on the watershed overlooking Camas Uig at approximately 40 m O.D. and continues to the east for over 2.5 km to enter Loch Miavaig (Figure 12.7). At the intake, the channel is small but deepens rapidly against the general slope of the land, and at its eastern end is over 45 m deep (Figure 12.8). Its western portion is sinuous but the eastern, most deeply incised section is linear, suggesting fault control. At its head there are three "blind" intakes in addition to the main one. Two of these blind ends are continued at the top of the slope by a peat-filled channel system which extends for approximately 800 m to the south-west where it too has an intake above Camas Uig, at an altitude of about 50 m O.D.



Figure 12.7: Landforms and deposits of the Glen Valtos –Uig area (from Peacock, 1984a).



Figure 12.8: Glen Valtos meltwater channel. The channel has the form of a single, narrow gorge. (Photo: D. G. Sutherland.)

There are no glaciofluvial deposits contained within the channel, but at its mouth by Miavaig (Figure 12.7) there is a group of small mounds composed of bouldery, poorly sorted fluvial gravels. In the upper part of the northern channel side (near NB 074346) up to 1 m of grey till is exposed. The implication of these deposits together with the discordant nature of the channel intakes is that the channel was probably formed, or at least initiated, subglacially.

The cliffed bedrock slopes of the channel have weathered to produce angular debris that has formed stratified screes several metres thick, but these deposits have not been investigated.

The various intakes to the channel system occur on bare rocky slopes. However, to the west, around Camas Uig, there are major glaciofluvial accumulations (Figure 12.7) (Peacock, 1984a, fig. 3). The principal ones are, first, a major arcuate ridge trending approximately south-west to north-east and terminating by Uig Lodge (NB 055333); second, a large glaciofluvial delta at Carnish (NB 030323) deposited to an altitude of about 53 m O.D.; third, a large area of dead-ice terrain south of Loch Rangavat (NB 042311); and fourth, a large mound of stratified sand and gravel to the west of Crowlista (NB 041339). All these deposits relate to meltwater flow from WSW to ENE.

Interpretation

The glaciofluvial deposits and landforms in the Uig area have been described in a number of publications. Jehu and Craig (1934) considered the Glen Valtos channel to have been eroded by waters overflowing from an ice-dammed lake in the area of Camas Uig, the Carnish delta having been deposited in the same lake. The large arcuate drift mound south-west of Uig Lodge was interpreted by both Godard (1965) and von Weymarn (1974) as an end moraine.

The former thought the ice from which it was deposited had occupied Camas Uig, whereas the latter suggested the moraine was related to a glacier emerging northwards from the valley of Loch Suainaval (NB 068290), on the opposite side from Camas Uig. In contrast, Ritchie and Mather (1970) interpreted the ridge as an esker, and Peacock (1984a) argued that it was one of a series of kames, eskers and morainic mounds that were possibly associated with subglacial drainage towards the channel. The topographic situation of the glaciofluvial deposits in the Uig area is such that at the time of their formation, drainage north-westwards to the sea via Camas Uig must have been blocked by ice and it is most probable that it was at this time that Glen Valtos was eroded. Such an interpretation is supported by the only slight difference in altitude between the highest intake to the Glen Valtos channel system (about 50 m O.D.) and the altitude of the top of the Carnish delta (53 m O.D.).

Striations, crag-and-tail landforms and ice-moulded bedrock indicate that the last ice movement in the Uig area was to the west of north. Both von Weymarn (1974, 1979) and Peacock (1984a) noted that the west to east direction of flow of the meltwaters draining through the Glen Valtos channel was almost at right angles to that direction of ice flow. Furthermore, the disposition of the features apparently requires ice lying off the west coast of south-west Lewis to have been thicker or to have melted later than ice in the Loch Roag area to the east. This pattern of ice decay is anomalous in terms of the present knowledge of glaciation of the Outer Hebrides and awaits further research to be fully understood.

The Glen Valtos channel is a particularly impressive example of a subglacial meltwater channel. In contrast to the majority of similar channels found elsewhere in Scotland, it has been eroded by waters flowing almost at right angles to the last direction of ice flow in the area. The channel is part of a wider assemblage of glaciofluvial deposits and landforms which were deposited during the same period of ice decay, but the reasons for the apparently anomalous direction of meltwater flow are as yet poorly understood. They seem to imply thicker ice immediately off the west coast of south-west Lewis than in the area close to the mountains that were one of the sources of the ice.

Conclusions

Glen Valtos is important for glacial geomorphology, in particular for the most impressive meltwater channel in the Outer Hebrides. It forms part of an assemblage of landforms and deposits that together provide important evidence for interpreting the pattern of decay of the last ice sheet (approximately 18,000–14,000 years ago). In particular, the direction of meltwater flow indicated by Glen Valtos implies the presence of thicker ice off the west coast of Lewis than onshore; this apparent anomaly (thicker ice would be expected nearer the mountain sources inland) remains to be explained in terms of what is known of the configuration of the last ice sheet.

Reference list

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